

## Patent Abstracts of Japan

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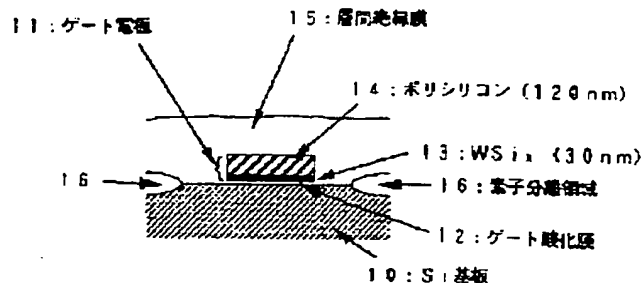
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INT.CL. : H01L 29/78 H01L 21/336 H01L 21/285  
H01L 21/8238 H01L 27/092

TITLE : SEMICONDUCTOR DEVICE AND  
FABRICATION THEREOF



ABSTRACT : PROBLEM TO BE SOLVED: To provide a semiconductor device and a fabrication method thereof in which the gate electrode can be made thick enough to block implantation of ions into a channel when a self-aligned diffusion layer is formed by ion implantation even if a material having a work function close to the midgap of silicon is employed in the gate electrode and an undue tensile stress is not applied to a gate oxide.

SOLUTION: A gate electrode 11 is composed of  $\text{WSi}_x$  13 and polysilicon 14 and the lower layer of  $\text{WSi}_x$  touches a gate oxide 12. Since the work function of  $\text{WSi}_x$  is close to the midgap of silicon, threshold voltage  $V_{th}$  can be controlled to a correct level. Tensile stress being applied to the gate oxide can be lessened by making thin the  $\text{WSi}_x$  layer and the entire gate electrode can be made thick enough by depositing polysilicon on the  $\text{WSi}_x$ .

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